



PATENT
P57002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

TAE-SUNG KIM

Serial No.: 10/767,281

Examiner: TOM THOMAS

Filed: 30 January 2004

Art Unit: 2811

For: NOVEL CONDUCTIVE ELEMENTS FOR THIN FILM TRANSISTORS USED
IN A FLAT PANEL DISPLAY

STATEMENT UNDER 37 C.F.R. §1.102

Mail Stop: OFFICE OF SPECIAL PROGRAMS

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

In accordance with 37 C.F.R. §1.102 and the procedure set forth in the *Manual of Patent Examining Procedure* (MPEP) §708.02 (I), Petitioner submits this statement in support of the accompanying Petition under 37 C.F.R. §1.102 and the accompanying Information Disclosure Statement.

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Date: 11/5/04

I.D.: REB/HMZ/kf

REMARKS

Status of the Claims

Claims 1, 2, 4 through 9, 11 through 15, and 17 through 19 are pending in this application. Claims 1, 4, 8, 11 and 14 are amended, while claims 3, 10, 16 and 20 are cancelled. Claims 1, 8 and 14 are independent claims.

The following is a detailed discussion of the references, which discussion points out, with particularity required by 37CFR§1.111(b) and (c), how the claimed subject matter is patentable over the reference. MPEP §708.02 (VIII, Special Examining Procedure For Certain New Applications-Accelerated Examination).

Pre-Examination Search

A pre-examination search was made through: Class 257, subclasses 059, 350, 412, 751, and 763; class 349, subclass 147; class 438, subclasses 030, 197, 627, 653, and 656; and the Japanese laid-open patent collection.

Detailed Discussion of The References

Pursuant to MPEP §708.02 (VIII)(E) of the *Manual of Patent Examining Procedure* (Rev. 2, May 2004) and 37 CFR §1.102, Applicant submits a detailed discussion of the references listed in the accompanying *Information Disclosure Statement*, which discussion particular points out, with the particularity required by 37 CFR §1.111(b) and (c), how the claimed subject matter is patentable over those references:

1. U.S. Patent No. 6.255.706 to Watanabe, *et al.*

Claims 1, 8, 14, and 21 each recite a diffusion prevention layer interposed between the aluminum alloy layer and the titanium layers. On the other hand, Watanabe, *et al.* relates to a thin-film transistor and method of manufacturing such a transistor. Watanabe, *et al.* fails to disclose a diffusion prevention layer interposed between the aluminum alloy layer and a titanium layer.

Claims 2, 4-6, 9, 3, 15, 17-18, and 23-24 each recite characteristics of the aluminum alloy layer and the diffusion prevention layers. On the other hand, Watanabe, *et al.* fails to disclose such characteristics.

2. U.S. Patent No. 6.448.612 to Miyazaki, *et al.*

Claims 1, 8, 14, and 21 each recite a diffusion prevention layer interposed between the aluminum alloy layer and the titanium layers. On the other hand, Miyazaki, *et al.* relates to a thin-film transistor and method of manufacturing such a transistor. Miyazaki, *et al.* fails to disclose a diffusion prevention layer interposed between the aluminum alloy layer and a titanium layer.

Claims 2, 4-6, 9, 3, 15, 17-18, and 23-24 each recite characteristics of the aluminum alloy layer and the diffusion prevention layers. On the other hand, Miyazaki, *et al.* fails to disclose such characteristics.

Furthermore, claims 8, 9, 11, 12, 13, and 21-24 each recite various features that they flat

panel display and a process for making a flat-panel display. On the other hand, Miyazaki, *et al.* fails to disclose a flat-panel display but rather merely refers to a pixel thin-film transistor and a driver circuit for driving the pixel thin-film transistor.

3. Japanese Laid-open Patent Application No. 09-153623.

Claims 1, 8, 14, and 21 each recite a diffusion prevention layer interposed between the aluminum alloy layer and the titanium layers. On the other hand, Japanese Laid-open Patent Application No. 09-153623 relates to a thin-film transistor. Japanese Laid-open Patent Application No. 09-153623 fails to disclose a diffusion prevention layer interposed between the aluminum alloy layer and a titanium layer.

Claims 2, 4-6, 9, 3, 15, 17-18, and 23-24 each recite characteristics of the aluminum alloy layer and the diffusion prevention layers. On the other hand, Japanese Laid-open Patent Application No. 09-153623 fails to disclose such characteristics.

Furthermore, claims 8, 9, 11, 12, 13, and 21-24 each recite various features that they flat panel display and a process for making a flat-panel display. On the other hand, Japanese Laid-open Patent Application No. 09-153623 fails to disclose a flat-panel display but rather merely refers to a thin-film transistor.

4. Japanese Laid-open Patent Application No. 09-45927 and corresponding U.S. Patent No. 6,166,396 to Yamazaki which claims priority thereon.

Claims 1, 8, 14, and 21 each recite a diffusion prevention layer interposed between the

aluminum alloy layer and the titanium layers. On the other hand, Yamazaki relates to a thin-film transistor. Yamazaki fails to disclose a diffusion prevention layer interposed between the aluminum alloy layer and a titanium layer.

Claims 2, 4-6, 9, 3, 15, 17-18, and 23-24 each recite characteristics of the aluminum alloy layer and the diffusion prevention layers. On the other hand, Yamazaki fails to disclose such characteristics.

5. Japanese Laid-open Patent Application No. 64-19763 and corresponding U.S. Patent No. 4,782,380 to Shankar *et al.* upon which priority has been claimed.

Claims 1, 8, 14, and 21 each recite a diffusion prevention layer interposed between the aluminum alloy layer and the titanium layers. On the other hand, Shankar *et al.* relates to a multilayer interconnection for an integrated circuit structure having two or more conductive metal layers. Shankar *et al.* fails to disclose such a feature but rather merely considers a diffusion prevention layer interposed between the aluminum alloy layer and a single titanium layer.

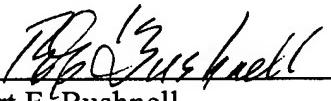
Claim 5, 12, and 24 each recites that each titanium nitride layer has a thickness between 100 and 500 Angstroms. On the other hand, Shankar *et al.* fails to disclose such a feature but rather considers a titanium nitride layer having a thickness between 800 and 1200 Angstroms.

Claims 6 and 13 each recites that each titanium nitride layer contains 5 to 85 wt% of nitrogen. On the other hand, Shankar *et al.* fails to disclose the percentage of nitrogen in the

titanium nitride layer.

As shown above, the cited related art fail to disclose all of the claimed limitations as arranged in the claims under 35USC§102 and the above related art fail to teach or suggest all of the features defined by the pending claims under 35USC§103. Moreover, even if the above references were combined in any manner, they would still not make the present invention obvious since for example, none of the above references, as shown above, teach or suggest a diffusion prevention layer interposed between an aluminum alloy layer and each of a pair of titanium layers as defined by independent claims 1, 8 , 14, and 21.

Respectfully Submitted



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Sir:

Applicant respectfully petitions the Commissioner to designate the above-referenced application as "Special" in accordance with the *Manual of Patent Examining Procedure* (MPEP) §708.02 (VIII), (8th Ed., Revision 2, May 2004), and as reason therefore states that:

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STATEMENT OF FACTS

1. The present application is assigned by the Applicant to Samsung SDI Co., Ltd. in an instrument that was recorded in the U.S. Patent & Trademark Office on Reel 014944, at Frame 0876 on the 30 January 2004, having the principal place of business at 575, Shin-Dong, Yeongtong-Gu, Suwon-si, Gyeonggi-do, Republic of Korea, a manufacturer of sufficient presently available capital and facilities, has long established relations with vendors and contract to manufacture the present invention in quantity if a patent is granted on the present application.
2. The Applicant has worked to develop and design prototypes of several constituent components for embodiments of the invention claimed; over the past three (3) years. Samsung SDI Co., Ltd. has spent about in excess of \$1,000,000.00 for wages, facilities, parts and materials, insurance and taxes, to research the invention claimed and to design, develop and build prototypes of the several constituent elements useful in the practice of the invention as claimed.
3. All pending claims are directed to a single invention.
4. Pursuant to §708.02 (VIII)(B) of the *MPEP* (Rev. 2, May 2004), if the Office determines that all the claims presented are not obviously directed to a single invention, Applicant will make an election in response to the established

telephone restriction practice.

5. In accordance with §708.02 (VIII)(C) of the *MPEP* (Rev. 2, May 2004), and 37 C.F.R. §1.102, Applicant has made a careful and thorough search of the prior art, and presents in the *Statement* filed simultaneously with this *Petition*, an analysis of the pending claims in the light of the art listed and discussed in the accompanying *Information Disclosure Statement* that is also filed simultaneously with this *Petition*.
6. In accordance with §708.02 (VIII)(D) of the *MPEP* (Rev. 2, May 2004), and 37 C.F.R. §1.102, Applicant submits with the accompanying *Statement* one copy of each of the references deemed most closely related to the subject matter encompassed by the pending claims.
7. Applicant has prepared and submits herewith a Preliminary Amendment amending independent claims 1, 8 and 14 and dependent claims 4-6, 11 and 12, and cancelling claims 3, 10, 16 and 20.
8. In accordance with §708.02 (VIII)(E) of the *MPEP* (Rev. 2, May 2004), and 37 C.F.R. §1.102, Applicant submits with the accompanying *Statement* a detailed discussion of the references, which discussion points out, with the particularity

required by 37 CFR §1.111(b) and (c), how the claimed subject matter is patentable over the references.

REMARKS

Pursuant to 37 C.F.R. § 1.102, explained in §708.02 of the *Manual of Patent Examining Procedure*, 8th Ed., Rev. 2, May 2004, Applicant is entitled to have this application made special, as a new application by demonstrating compliance with §708.02 (VIII) of the Manual.

As explained in the accompanying Statement of the Applicant, Samsung SDI Co., Ltd. requests the Office to advance the prosecution and examination of their above-captioned U.S. patent application, without further delay in the U.S. PTO process, in view of the Applicant's and Samsung SDI Co., Ltd.'s compliance with §708.02 (VIII)(A) through (E) of the *MPEP* (Rev. 2, May 2004), and 37 C.F.R. §1.102, as demonstrated by the accompanying *Statement* and *Information Disclosure Statement*.

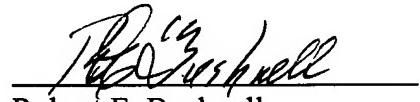
A fee of \$130.00 is incurred by 37 C.F.R. § 1.17(h). Applicant's check drawn to the order of Commissioner accompanies this Petition. Should the check become lost, be deficient in payment, or should other fees be incurred, the Commissioner is authorized to charge Deposit Account No. 02-4943 of Applicant's undersigned attorney in the amount of such fees.

RELIEF REQUESTED

The Commissioner is therefore, respectfully requested to:

- A. Grant this *Petition*, designate the application as "Special", and accelerate the examination of the application;
- B. Grant such other and further relief as justice may require.

Respectfully Submitted



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